

C L A I M S

1. In a code division multiple access transmit modulator comprising a channel encoder for convolutionally encoding input signal from a vocoder with symbol repetition and interleaving the encoded signal; a channel modulator for combining the output signal from said channel encoder and an orthogonal code signal distinguishing one from another traffic channel; a pair of pseudo noise (PN) combiners, each for combining the output signal of said channel modulator and a respective one of a pair of pseudo noise signals which have a predetermined offset in phase; a pair of lowpass filters, each for filtering a respective output signal of said plurality of PN combiners and flattening the power level of the output signal; and an analog signal modulator for converting the output signals of said pair of lowpass filters to an RF signal, an apparatus for obtaining multiple subchannels within a traffic channel, comprising:
 - a plurality of subchannel encoders substituted for said channel encoder, each for convolutionally encoding with symbol repetition and interleaving input data from a respective one of a plurality of subchannels, the data rate of each of the plurality of subchannels being lower than the encodable date rate of the traffic channel by said channel encoder;
 - a plurality of subchannel modulators, each for combining an output signal from a respective one of said plurality of subchannel encoders and a respective orthogonal code signal distinguishing one from another subchannel, all subchannels being accommodated in a single traffic channel; and
 - a subchannel summer for summing output signals of said

plurality of the subchannel modulators and providing the summed signal to said channel modulator.

2. An apparatus according to claim 1, wherein the data rate of each of the plurality of subchannels is N times lower than a predetermined data rate of input signal that is inputted to said channel encoder, N being the number of said subchannel encoders.

3. An apparatus according to claim 1, wherein the data rate of said orthogonal code signal defining a subchannel is equal to a predetermined data rate of input signal that is inputted to said channel modulator.

4. An apparatus according to claim 1, wherein said subchannel summer comprises:

a plurality of storing means, each for storing subchannel signal from a respective one of said plurality of subchannel modulators; and

data processing means for reading and processing the subchannel signals stored in said plurality of storing means.

5. An apparatus according to claim 1 or claim 4, wherein said subchannel summer reduces the energy of the subchannel data of each or all of the plurality of subchannels.

6. A method of obtaining multiple channels within a traffic channel in a code division multiple access transmit modulator, comprising the steps of:

(a) encoding a plurality of input signals by using convolutional encoding, symbol repetition, and interleaving independently;

(b) multiplying each of a plurality of the encoded signals by a first respective orthogonal code signal distinguishing one from another subchannel, so as to provide a plurality of resultant subchannelized input signals;

(b) mixing the plurality of subchannelized input signals into a resultant combined signal;

(d) multiplying the combined signal by a second orthogonal code signal distinguishing one from another traffic channel, so as to provide a resultant channelized signal;

5 (e) multiplying the channelized signal by a PN code which is predetermined-offset in phase, so as to provide a PN code modulated signal;

(f) filtering the PN code modulated signal and flattening the power level in the frequency band; and

10 (g) converting the filtered signal into an radio frequency signal.

7. A method according to claim 6, wherein the data rate of the input signal is N times lower than the data rate defined for the resultant combined signal, N being the number of said plurality of input data.

15 8. A method according to claim 7, wherein the bit rate of the first orthogonal code signal is equal to the data rate defined for the resultant combined signal.